

Saturday 11 December 2004

# ENERGY MANAGEMENT OPPORTUNITIES

**Energy Efficiency Office**

## 3 Categories of Energy Management Opportunities

- ✿ **Cat. 1: Simple and easy housekeeping practices**
- ✿ **Cat. 2: More savings at a reasonable cash outlay**
- ✿ **Cat. 3: Substantial savings over a long term with capital investment**

# EMOs examples....

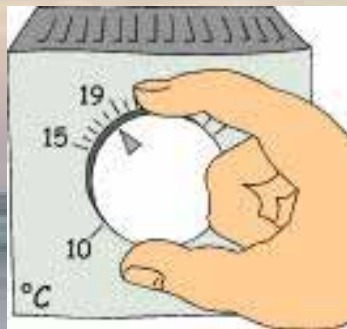
## Category I EMOs



# Air Conditioning

## Minimize Energy Use

- ✦ Turn off AC right after use – affix “Save Energy” sticker near the exit
- ✦ Use natural ventilation or fan where possible
- ✦ Set AC at 24°C and suitable fan speed. Check temperature regularly



# Air Conditioning

## Use Energy Efficiently

- ✿ Set up maintenance programme to ensure efficient operation
- ✿ Clean AC and dust filter
- ✿ Replace room coolers with more energy efficient models with Grade 1 or 2 Energy Label

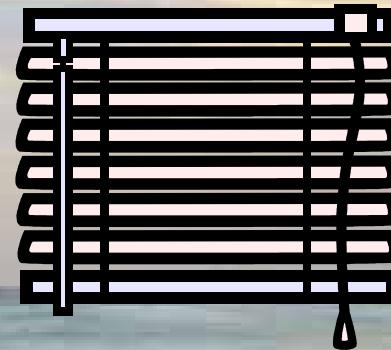
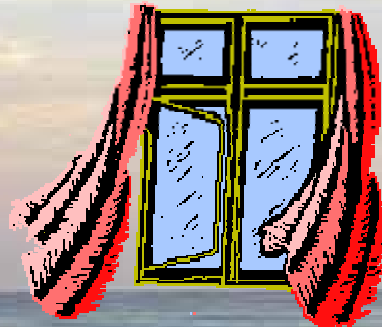


ENERGY LABEL 能源標籤	
Brand 牌子	ABC 某某牌
Model 型號	HK1234
Annual Energy Consumption - kWh/y 每年耗電量 - kWh/y	1200
Energy Efficiency Grade* 能效等級	1
Room Cooler Category* 室冷器類別	1
Cooling Capacity - kW 製冷量	3.5
Refrigerant 制冷剂	R32
EEL Registration Number EEL註冊號碼	C 99 0001

# Air Conditioning

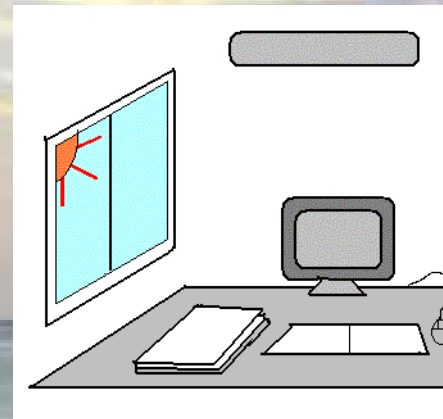
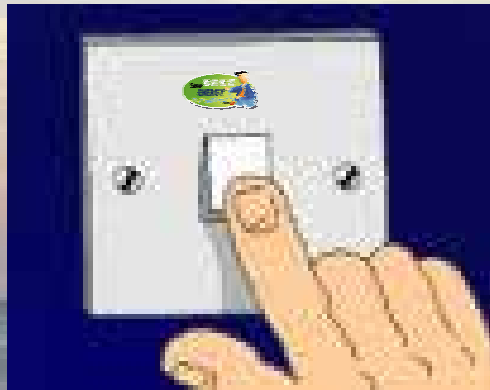
## Minimise Energy Loss

- ✿ **Keep windows and doors closed to minimise air infiltration when AC is running**
- ✿ **Lower window blinds or curtains to reduce direct sunlight during summer time**



# Lighting

- ✿ Turn off unnecessary lighting for area not in use – affix “Save Energy” sticker near the switch
- ✿ Turn off or dim lighting in perimeter area





# Lighting

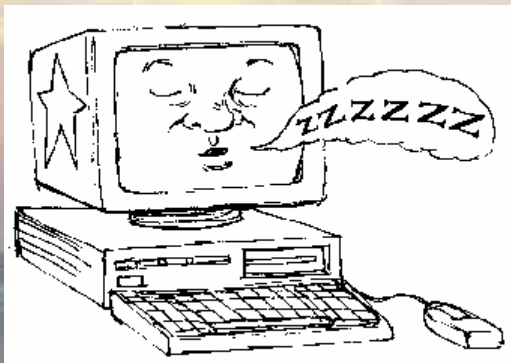
**Examples for switching off**





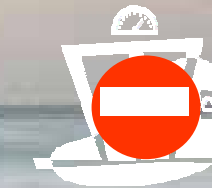
# Office Equipment

- ✱ **Set all computers and office equipment to “energy saving” mode, and turn them off after use**
- ✱ **“Screen Saver” is actually “Energy Waster” & should not be used when computer is idle**
- ✱ **Unplug equipment chargers and adapters when these electronic equipment are not in use**
- ✱ **Arrange for last-man-out to turn off all equipment**



# Lifts & Escalators

- ✦ **Use the stairs for 1 or 2 floors up or down – affix “Save Energy” sticker near the lift**
- ✦ **Shut down some of the lifts and escalators during non-peak hours**
- ✦ **Switch off the lighting and ventilation fan inside the lift car when the lift is in standby/idle mode**



# Facility Management

- ✿ **Keep windows and doors shut for all AC areas**
- ✿ **Avoid pre-cooling. If pre-cooling is necessary, switch on AC not more than 15 minutes in advance**
- ✿ **Turn on exterior lighting only when necessary**



# Get Your People Into Action

- ✿ **Get support from all staff**
- ✿ **Explain energy policy and housekeeping practices (and incentive scheme) through staff briefings, emails, newsletters or notice boards**
- ✿ **Affix “Save Energy” stickers at switches, doors, exits, lifts and escalators as a reminder**
- ✿ **Keep track of organisational performance in energy saving, and benchmark against targets**



# EMOs Examples..... Category II

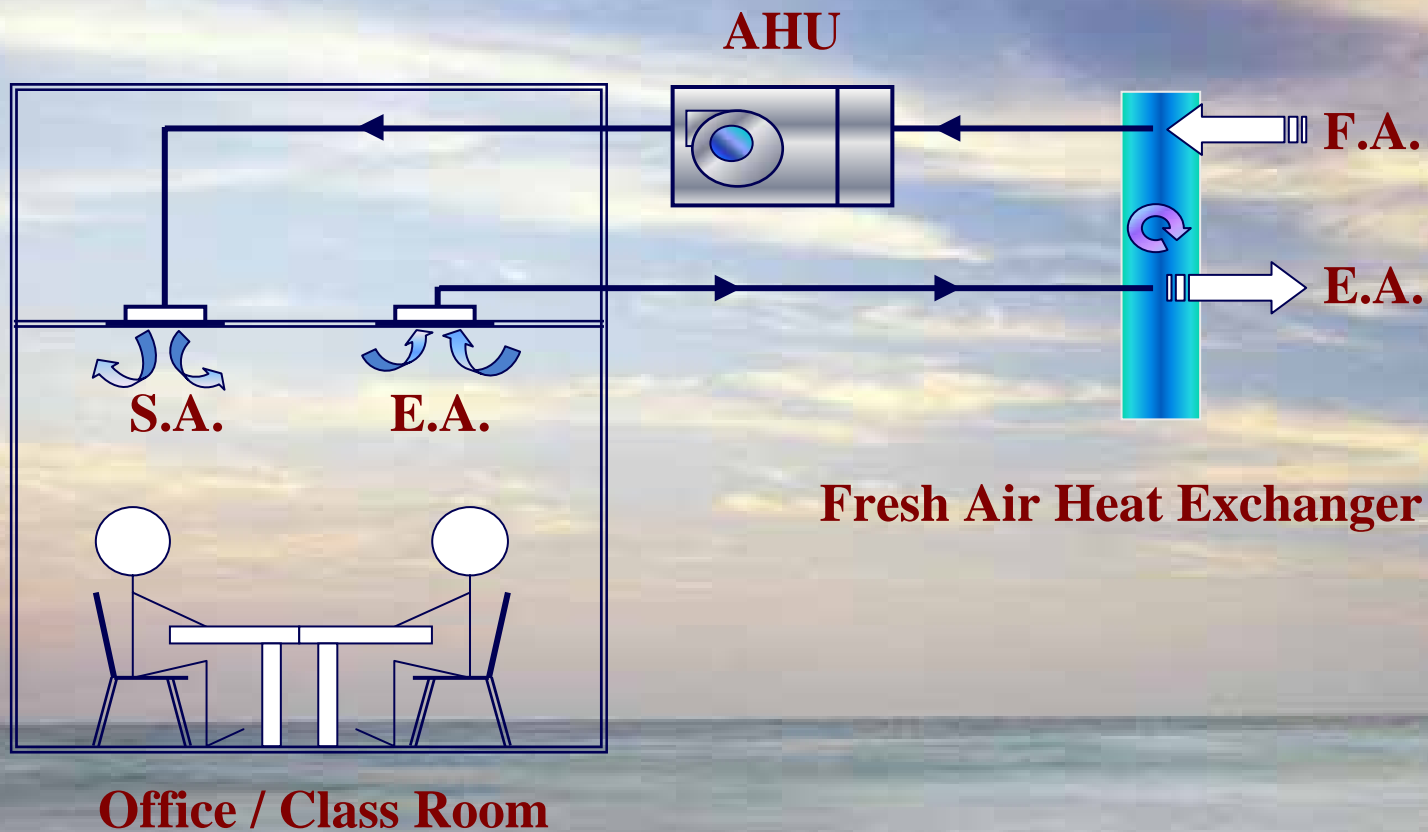


# Category 2 Measures

- ★ **Energy Saving > Cat. 1**
- ★ **Small Capital Investment**
- ★ **Payback < 3 Years**
- ★ **Some Engineering Work**

# Air Conditioning

## Install Fresh Air Heat Exchanger





# Fresh Air Heat Exchanger

**Energy saving about 10 ~ 15%**



# Air Conditioning

- ✿ Relocate temperature sensors to suitable location that can properly reflect the space conditions under control
- ✿ Increase every 1°C of set point temperature will save about 1.5% of electricity



# Air Conditioning

**Use evaporative water-cooling for condensers**

**Energy saving about 10~15%**



# Lighting



**Replace tungsten lamps with  
fluorescent tubes or compact  
fluorescent lamps (CFLs)**

**Energy saving up to 80%**



# Lighting

**Replace 'fat' tube (T12 or T10 fluorescent lamp) with 'thin' tube (T8 fluorescent lamp)**

**Energy saving about 10%**





# Lighting

**Replace conventional magnetic ballasts with electronic type**

**Energy saving about 20~40%**

Magnetic ballast



Electronic ballast



# Lighting

**Install separate control for lighting at window perimeter to allow “switch off” during bright days**

**Energy saving about 10~15%**





# Lighting

**LED is gradually replacing some conventional lighting technologies**

- ✦ Long life, maintenance free (up to 100,000 hours)
- ✦ Operates on extra-low voltage (12V and 24V)
- ✦ Range of colours

**Applications:-**

**Effect lighting**

**Signalling**

**Emergency lighting**



# Lighting

	<b>Conventional Exit Sign</b>	<b>LED Exit Sign</b>
<b>Capital Cost</b>	<b>\$250</b>	<b>\$400</b>
<b>Running Cost</b>	<b>\$342</b>	<b>\$35</b>
<b>Payback years</b>	<b>N/A</b>	<b>0.5 years</b>



Thank You

Hot-line 1823

Website

[www.emsd.gov.hk](http://www.emsd.gov.hk)